International Journal of Engineering and Technology(UAE), 2018, vol.7, N4.7 Special Issue 7, pages 215-218

Engenieering technology in plastic biodegradation by large bee moth larvae depends on the type of polyethylene

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Abstract

© 2016 Authors. The objective of this research was to evaluate the processes of biodegradation of different types of polyethylene by G. mellonella larvae. The determination of the types of polyethylene samples was carried out by IR Fourier spectrometry. The structure of solid household waste includes polyethylene of different types. When assessing the degree of biodegradation, it was found that holes in the polyethylene samples of different sizes formed 5.3±2.4 - 28.7±9.4 units/day and 54.8±12.6 - 1867.8±38.6 mm2/day, and the mass of polyethylene samples, depending on the type, decreased on average by 1.5±0.5 - 51.0±6.5 μg/day. The obtained results of survival, mobility, weight gain and melanization indicate the absence of negative health effects on larvae when eating polyethylene.

Keywords

Biodegradation, Galleria mellonella, IR Fourier spectroscopy, Large bee moth, Polyethylene

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